~~Suz~~
File ACT/045/013

Getty

Getty Mining Company | P. O. Box 838, Tooele, Utah 84074-0838 • Telephone (801) 268-4447

Mercur Mine

June 4, 1985

Mr. Lowell P. Braxton, Administrator
Mineral Resource Development & Reclamation Program
Utah State Department of Natural Resources
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Lowell:

SUBJECT: Proposed MRP Amendment to Mercur Gold Mine, ACT/045/013 - Request for Conditional Approval for Topsoil Removal from Dump Leach Areas

Getty Mining Company submitted to the Division of Oil, Gas & Mining on March 7, 1985, a proposal to amend our MRP for the Mercur Mine to allow a dump gold leaching operation. Simultaneously, requests for operating and use permits were submitted to the Bureau of Water Pollution Control and Tooele County. Since this initial submittal, we have received responses from your agency and the BWPC requesting substantial amounts of additional design, construction, and operating information on the proposed dump leaching operation.

At this time, Getty is preparing the necessary information to submit to your agency and the Bureau of Water Pollution Control. The firm of Mine & Mill Engineering from Salt Lake City has been retained to assist with the engineering design aspects of the modifications. You can anticipate receiving by June 17, 1985, the modified proposals and answers to your comments as presented in your letter of May 21, 1985.

In light of the forthcoming information and realizing the necessity for timely staging of required work that needs to be completed during our relatively short construction season, Getty is requesting approval to commence topsoil removal as soon as possible from the proposed dump leach area 2 (see attached drawing). Getty proposes to complete the following actions under this conditional approval:

- All vegetation in the topsoil removal areas will be grubbed off and removed. Removed vegetation will be

File ACT/045/017

GETTY MINING COMPANY - MERCUR MINE

PROPOSED HEAP LEACHING OPERATION
DESIGN, OPERATING AND ENVIRONMENTAL CRITERIA

Introduction

Getty Mining Company is proposing to construct and operate a full-scale, continuous heap leaching system at its Mercur Gold Mine in Tooele County, Utah. The purpose of this system is to more completely extract and recover gold from ore that is not feasible to process through our existing gold extraction process.

Presented hereafter in the text of this document are discussions concerning the design and operating criteria for the heap leach system, as well as information on environmental protection measures to be utilized. Drawings are attached for ready reference and are noted in the text.

Design Criteria

As depicted on attached Drawing No. 1, the location of the proposed heap leach operation is just north of the existing plant complex site. Run-of-mine waste will be utilized to fill in the existing valley to produce a sloped, flat surface for the heap leach system. Drainage, sedimentation control, topsoil stripping, and road relocation aspects are discussed in the environmental protection section of this document.

The valley fill will be compacted by earth-moving equipment or compacting equipment as required. Anticipated volume of mine waste to complete the valley fill is about 7×10^6 tons minimum.

Upon completion of the fill to its ultimate elevation, the surface will be graded and compacted to provide a relatively smooth, stable surface. The total surface area of the pad needed to support the heap leach system is approximately 40 acres. This area will be prepared according to the following design to accommodate the heap leaching system:

1. Sand or Golden Gate mill tailings will be placed on the required fill pad area to a depth of about 18" and compacted as placed.

2. A 10-mil polyethylene sheet liner will be placed on the sand or old mill tailings under the entire heap pile area.

3. A grid of 1" diameter, perforated schedule 40-pvc pipe will be placed on the 10-mil sheet liner to facilitate quick detection of leaching solution seepage through the upper layers described hereafter (4-7).

4. An 80-mil geotextile, Crown Zellerbach Fibretex 300 or equivalent, will be placed over the entire leach pad area.

5. An 80-mil high-density polyethylene impervious liner sheet will be installed over the entire geotextile. Lining to be used is Schlegel 2.0 mm or equivalent. All seams will be extrusion welded and ultrasonic tested in situ.

6. A 110-mil geotextile fabric, Crown Zellerbach 400 or equivalent, will be placed over the impervious lining. This geotextile will provide cushion protection for the impervious lining as it will be in contact with rock material.

7. A 4-foot crown of crushed ± 3" rock will constitute the final layer of the heap leach system pad. This crown will provide a free draining strata upon which the ore will be placed. In addition, it will prevent damage to the underlying geotextiles or impervious lining from vehicular traffic and earth-moving equipment.

Drawing No. 2 provides graphic illustration of the various components of the heap leach pad. It should be noted that the entire surface area covered by the geotextile and impervious liners will be sloped to drain from the heap leach piles towards collection ponds described hereafter.

Two pond depressions will be made down-gradient from the heap leach piles. These will consist of a pregnant solution pond, which will contain the gold-rich cyanide leach solution coming from the heap leach piles, and a barren solution pond, which will contain gold-barren solution coming from activated carbon columns where the gold is stripped from the pregnant solution by the carbon. Both ponds will be similarly constructed by excavating the depressions to design and placing respectively 6" of compacted Golden Gate mill tailings or sand, an 80-mil geotextile, and an 80-mil high density polyethylene impervious liner sheet. Design capacity of both ponds will include maximum volume of the systems pregnant or barren solution plus the runoff from a 10-year, 24-hour precipitation event falling on areas drained to the pregnant or barren solution ponds.

An oil-fired solution heater will be used for heating the leach solution during freezing conditions. A Train Thermal 12,000 or equivalent heater will be used. Fresh water will be heated which in turn will be passed through heat exchangers to heat the cyanide leach solution. The heat exchangers and pumps will be on a concrete pad that drains into the barren solution pond in the event of a rupture or leak.

Ore material, after leaching, is referred to as spent leach material (SLM). The SLM will be placed at a deposition site as depicted on Drawing No. 1. This site is located just east and north of the valley fill heap leach facility.

The SLM deposition site will ultimately cover a minimum of 25 surface acres. Design of the SLM deposition area shall be similar to the leach pad, incorporating lining technology to prevent any previously undrained leaching solution from free draining to the environment. The entire ultimate SLM deposition area will be cleared of vegetation and topsoil prior to placement of a 6" layer of Golden Gate mill tailings or sand base. Upon the sand base will be placed a 60-mil high density polyethylene impervious liner sheet. An 80-mill geotextile will be placed over the sheet liner to cushion the liner against the impact of the deposited SLM.

Due to the topography underlying the SLM deposition area, any percolation of fluid through the SLM will flow readily to the toe of the SLM dump. A drainage collection system will be installed at the toe of the SLM to carry any solution to the barren or pregnant solution ponds of the heap leaching system located down gradient. The collection system employed will consist of a lined, excavated channel and crossing culverts. Design of the collection culverts and channel will be sufficient to contain flows resulting from the 10-year, 24-hour precipitation event falling over the entire SLM deposition area. All other noncontaminated drainage shall be routed around the SLM, as depicted in Drawing No. 4. In addition, internal drains will also be installed within the SLM dump to minimize saturation.

A plan view of the heap leach system, including all auxiliary components, is presented on Drawing No. 3.

Operating Criteria

The heap leach system essentially consists of spraying a pile of low and/or high grade gold-bearing ore with a weak cyanide solution to slowly leach gold from the ore as the solution passes through the pile. The gold-containing pregnant solution is then collected and passed through columns of activated carbon to remove the gold from the liquid. The gold-laden carbon is then transferred to our mill's CIL process for

gold recovery. The (barren) solution exiting the carbon columns is returned to the leaching operation where cyanide is added to maintain leaching fluid strength and applied to the heap leach pads. The entire system is a closed loop.

Three heap leaching piles are to be utilized in this system (see Drawing No. 3). Each pile will be 200' w x 400' l x 15' h with 2:1 side slopes. All three piles will be placed upon the supporting fill and underlaid with liners as described in the "Design Criteria" section. All heap piles will be constructed by back-dumping ore on the 4' thick crown cover and using a dozer to shape the heap piles. Two such piles will be under leach at any one time, with the remaining pile being constructed, drained, or removed.

Once constructed, the piles will be leached by pumping a 2-pound-per-ton cyanide solution at a pH of 10.0 to 10.5, to Senninger sprinklers. The Senninger sprinklers, chosen due to their wind drift minimization capabilities, will spray the tops of the piles at a rate of 0.004 gallons per minute per square foot, or 230 gallons per minute per pile. The cyanide solution, after soaking through the ore pile and crushed rock liner cover, will be collected on top of the impervious liner and then drain to a collection point. At the collection point, the leach solution will be continuously analyzed for contained gold content. If the contained gold content is considered "high grade," the solution will be directed to the pregnant solution pond for gold recovery. If the leach solution contained gold content is considered to be "low grade," it will be directed to the barren solution pond for cyanide content and pH control and reapplied to the heap leach piles.

The ore material in the heap leach pile, after all recoverable gold has been leached out, is called spent leach material (SLM). As previously described in the "Design Criteria" section, the SLM will be removed from the leaching pad and placed at the SLM deposition site. This removal and placement will be accomplished with front-end loaders and haulage trucks. It should be noted that the 4' crushed rock cover will remain on the pad to protect the liner.

The SLM dump will be constructed similarly to our existing mine waste rock dumps. End-dumping via our haulage trucks will be normal procedure, with dozer and grader support for shaping and grading control.

Environmental Protection Criteria

All necessary precautions will be taken to ensure environmental protection during construction and subsequent operation of the heap leach system. Items of concern shall include

vegetation and topsoil stripping, surface runoff, drainage reestablishment and collection, road relocation, water quality monitoring, wildlife protection, and operating surveillance procedures. Each of these issues is discussed in detail hereafter. Attached Drawing No. 4 depicts environmental protection measures to be installed for physical aspects of the heap leach project.

Topsoil Stripping. All available topsoil will be cleared from areas to be impacted as a result of the heap leach system construction and stockpiled at any of the locations depicted on Drawing No. 4. Total acreage requiring vegetation and/or topsoil stripping as a result of the heap leach system installation is estimated to be 41 acres. This acreage was determined by field surveillance of topsoil zones found in the anticipated disturbed 40-acre valley fill pad area, 25-acre SLM dump area, and the 25-acre roads/miscellaneous areas. Estimated topsoil quantities to be recovered are about 1×10^6 cubic feet. All topsoil stockpiles will be constructed and maintained similarly to existing topsoil stockpiles, i.e., stable slopes, erosion control via drainage diversion, stockpile seeding, etc.

Drainage Reestablishment and Collection. As depicted on Drawing No. 4, modification to the drainage and sediment control facilities will be required. The sedimentation pond immediately below the main plant pad will be relocated, as will the pond above the old Golden Gate mill tailings, since the valley fill for the heap leach system will cover these sites. A combined pond will be constructed at a site down-canyon, designed to accommodate the storage and runoff capabilities of the two ponds scheduled for covering. As these ponds are discharge points under our NPDES permit number UT-0023884, a request for modification will be made to EPA Region VII.

All drainages impacted by the heap leach system and road relocation will be analyzed for runoff characteristics and this data incorporated into the design of the drainage collection system and combined sedimentation pond.

Every effort will be made to effectively contain heap leach system runoff within its operating facilities. All non-contaminated surface runoff will be routed around the heap leach system or effectively isolated from potential contamination.

Upon completion of all drainage and sedimentation structures, necessary erosion control or reclamation work will be scheduled for completion as soon as practicable.

Road Relocation. The upper portion of the main access road to the Mercur plant complex will require relocation. Drawing No. 4 details the proposed route of the relocated road. Approximately 2 miles of new road will be required.

Road design and construction will be performed in accordance to all state and/or county regulations governing such roads. Approval will be obtained from Tooele County for this relocation work. At this time, it is not anticipated to place blacktop on the road, but rather compacted gravel.

Road grades and drainage will be designed to optimize vehicular traffic and minimize potential for road failure due to precipitation event runoff. Drainage routes associated with the road relocation are also depicted on Drawing No. 4.

Upon completion of the new access road, necessary erosion control or reclamation work will be scheduled for completion as soon as practicable.

Water Quality Monitoring. As mentioned earlier in the "Design Criteria" section of this application, a network of perforated pvc pipe will underly the sheet liner beneath the heap leach piles. These pipes will be arranged so as to have a common discharge point representative of a particular area beneath the liner. In the unlikely event of a liner rupture, the leaking area can be traced via the common discharge pipe through which the leachate is observed.

All discharge pipes will be observed daily to ensure timely notice of any leakage. In the event of observed flow, analysis of the fluid will be made to characterize the content and provisions made to repair the liner as soon as practicable.

The use of Senninger sprinklers will minimize any potential wind drift of leaching solution to the surrounding area. The heap leach piles will be situated on the leaching pads in such a way as to provide a buffer zone around the leach piles underlaid with the impervious liner. Continuing observation of the sprinkling process will occur.

Wildlife Protection. The heap leach system is located in an area not observed to be frequently visited by area wildlife, especially deer, due to its proximity to the main plant complex. Wildlife encroachment into the area will be evaluated upon completion of the system and all efforts made to discourage wildlife from entering the area, including the possible installation of a deer fence.

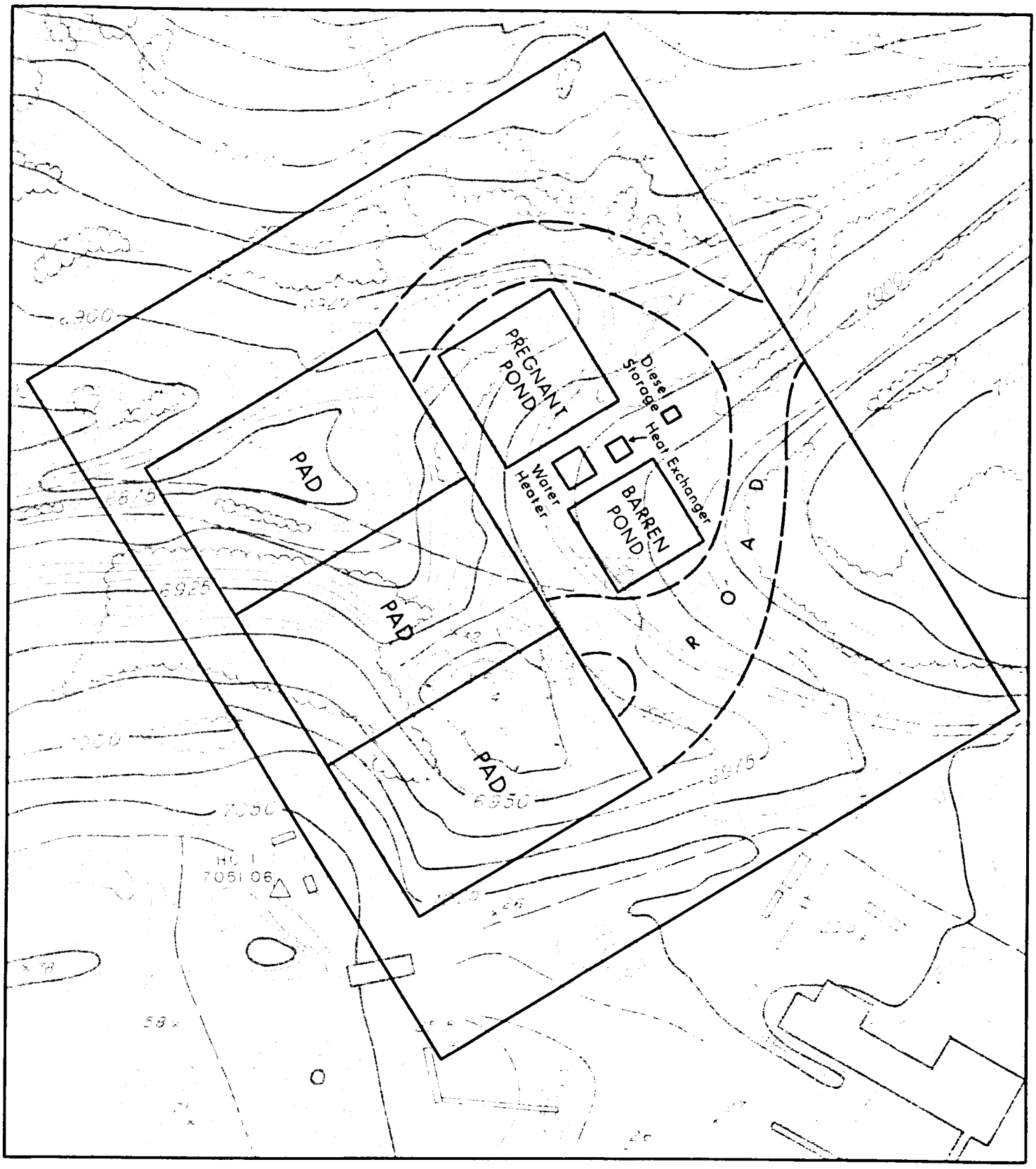
Operating Surveillance Procedures. Mill personnel will be in regular and routine attendance at the heap leach area. Documentation of all operating aspects of the system will be kept.

Environmental, safety, industrial health, and security personnel will also perform surveillance activities in the leaching area for their various areas of concern.

Procedures are presently in existence for reporting system upsets or situations of concern to the various operating groups at Mercur. Upon completion of the heap leach system, all notification and emergency procedures will be modified, if necessary, to accommodate the established operating schedules of the heap leach system.

Summary

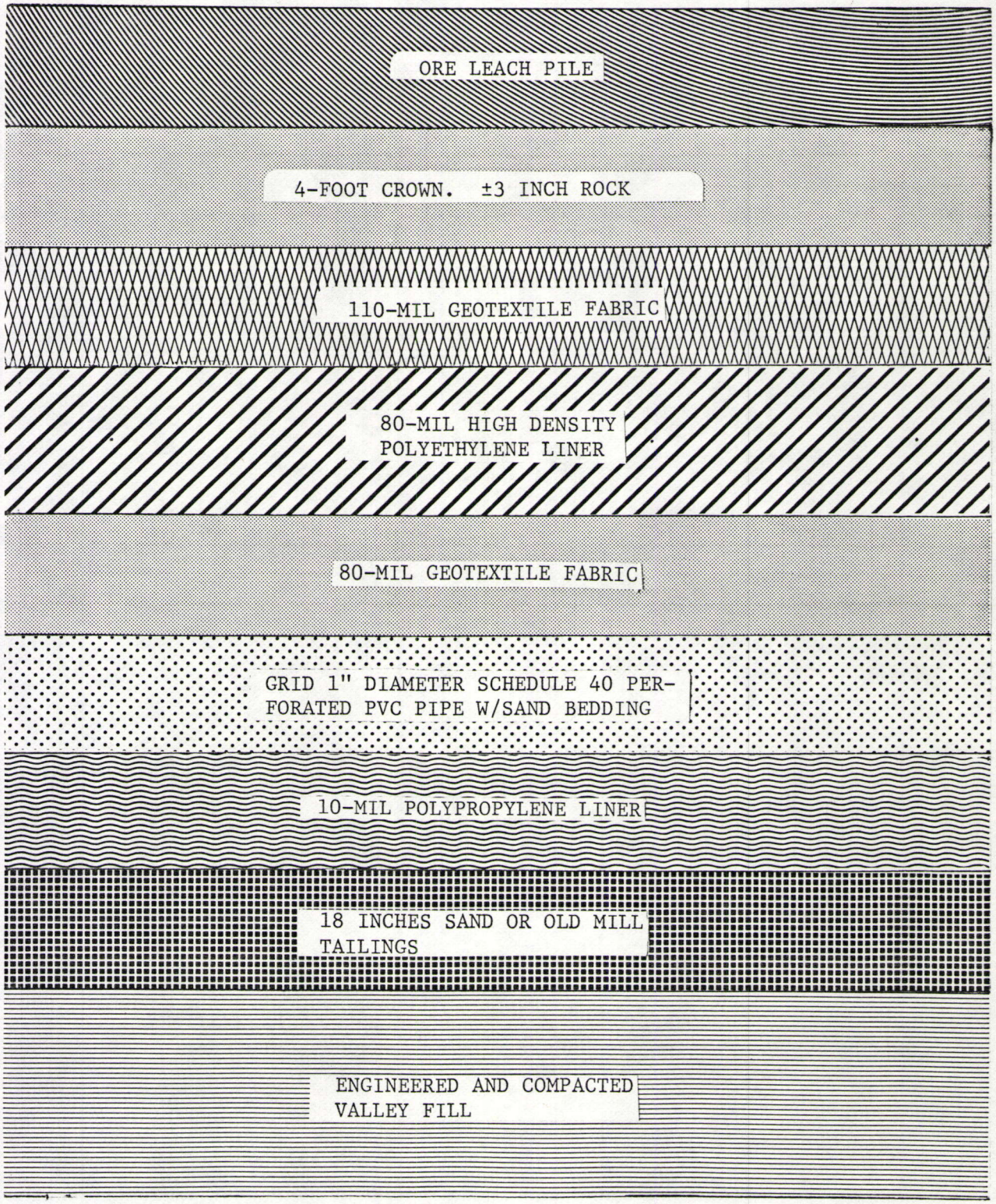
Getty Mining Company is confident that this proposed heap leaching system constitutes no threat to environmental protection at the Mercur Mine. All necessary environmental safeguards will be incorporated into the design, construction, and operating procedures to allow a safe and efficient leaching operation to exist for additional natural resource recovery.



PROPOSED HEAP LEACH CONFIGURATION

MERCUR MINE

DRAWING 3



DRAWING NO. 2 GME 4-2-84
Scale: None

CROSS SECTION (TYP). HEAP LEACH LINER/DRAIN CONFIGURATION